

ABSTRACT

A wavelength filter, which has a simple structure with a small number of types of thin films and a small number of laminations, is produced by a simple process, has few variations of performance and has a broad wavelength band, is provided. The wavelength filter is composed of a grating in which a first portion (103) extending in X direction on a substrate surface and a second portion (105) extending in the X direction along the first portion are alternately arranged in Y direction perpendicular to the X direction on the substrate surface at a constant cycle shorter than the wavelength of light to be used. The cross-sectional figure of respective first portions in the Y direction and perpendicular to the substrate surface is provided with at least one protruding portion (107) so as to have the width in the Y direction wider than that of neighboring portions. It is constituted so that plural waveguide layers parallel to the substrate surface divided by regions parallel to the substrate surface in the range of the predetermined distance are formed, and that wavelength bands of light reflected from the plural waveguide layers shift while overlapping with each other to reflect a wavelength band broader than that reflected from a single waveguide layer.